

## Three new species of Chloropidae (Diptera) from southern Sardinia\*

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### Abstract

During a recent survey of arthropod diversity in several localities of southern Sardinia, three new species of Chloropidae (Diptera) were discovered: *Aphanotrigonum lanceolatum* sp. nov., *Dicraeus sardous* sp. nov. and *Elachiptera sarda* sp. nov. The first is close to *A. hastatum* Dely-Draskovits from Afghanistan; the second is placed in subgenus *Oedesiella* Becker; the third is compared to *E. cornuta* (Fallén, 1820) and *E. rufifrons* Duda, 1932.

**Key words:** Diptera, Chloropidae, Italy, Sardinia, new species

### Introduction

The Chloropidae of Sardinia have never been the subject of focussed specific research. Old citations of Chloropidae from Sardinia include those by Costa (1883, 1884a, 1884b, 1885, 1886, 1891), Corti (1909) and Leonardi (1927), while Canzoneri *et al.* (1995) recorded 36 species (in 17 genera) from Sardinia in general, without further details on their distribution. According to the *Fauna Europaea* online database (Nartshuk 2004), the current knowledge for this family in Sardinia is 38 recorded species.

Between 2003 and 2006, the Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale “Bosco Fontana”, Verona (Italy) (CNBFVR) collected large quantities of entomological material in the framework of a study on the arthropods of southern Sardinia, mainly in the southwestern areas of Marganai and Montimannu (Carbonia-Iglesias province and Medio Campidano province, respectively) (*cf.* Mason *et al.* 2006) but also in the southeastern province of Ogliastra. Over 3,000 Chloropidae were collected during the survey, including specimens belonging to three undescribed species: *Aphanotrigonum lanceolatum* sp. nov., *Dicraeus sardous* sp. nov. and *Elachiptera sarda* sp. nov., all belonging to the subfamily Oscinellinae. These are described here and compared with related species. The other species collected during the survey will be treated in a separate paper.

### Study area

The new species of Chloropidae were collected from the following localities: Monte Tonneri (Seui, Ogliastra province), Lago Siuru (Domusnovas, Carbonia-Iglesias province) and Valle Oridda (Domusnovas, Carbonia-Iglesias province) (see further on for details and geographic coordinates of these sites).

Monte Tonneri is a large limestone plateau south of the Gennargentu massif, with a maximum altitude of 1,324 m. The plateau is partly covered by forest (1,668 ha), mainly composed of *Quercus ilex* (holm oak)

mixed with *Ostrya carpinifolia* (hop hornbeam) and including *Ilex aquifolium* (holly) and *Taxus baccata* (yew). Some areas have been reforested with conifers, and the remaining areas are covered by grassy formations with typical Mediterranean vegetation. The area was investigated in September 2006 using mainly hand nets near resurgence areas or small watercourses (e.g. Saliccaiei su de) inside the forest.

Lago Siuru (322 m) is an artificial dam lake in the commune of Domusnovas, surrounded by scrubby/woodland vegetation with *Cistus* spp., holm oak and *Olea europaea* var. *sylvestris* (wild olive); the shallow parts of the lake contain dense *Typha* thickets, which were swept with an entomological hand net for small Diptera. Malaise traps were set up in this area during short periods (4–5 days) in May and July 2006.

Valle Oridda (592 m) is a wide valley in the commune of Domusnovas, characterized by an open, secondary garrigue-type vegetation with shrubs of *Cistus* spp., *Lavandula stoechas stoechas* and *Euphorbia pithyusa cupanii*. The valley is crossed by a torrent, Rio Oridda, that runs almost dry during the hottest months of the year. A Malaise trap was set up at this site from March to October 2006.

## Material and methods

All material was collected with Malaise traps except for the holotype and most paratypes of *Aphanotrigonum lanceolatum* sp. nov., which were collected with hand nets. All material collected with Malaise traps is stored in 70% ethanol; some material collected with hand nets is dry-pinned.

Terminology of external morphology and of the male terminalia follows McAlpine (1981). The key to genera of the Palaearctic Chloropidae (Ismay & Nartshuk 2001) was used to identify the genera to which the new species are assigned.

Acronyms of depositories:

CNBFVR Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale, “Bosco Fontana”, Verona, Italy

ZIN Zoological Institute of the Russian Academy of Sciences in St. Petersburg, Russian Federation.

## Species descriptions

### *Aphanotrigonum lanceolatum* sp. nov.

(Figs 1–2)

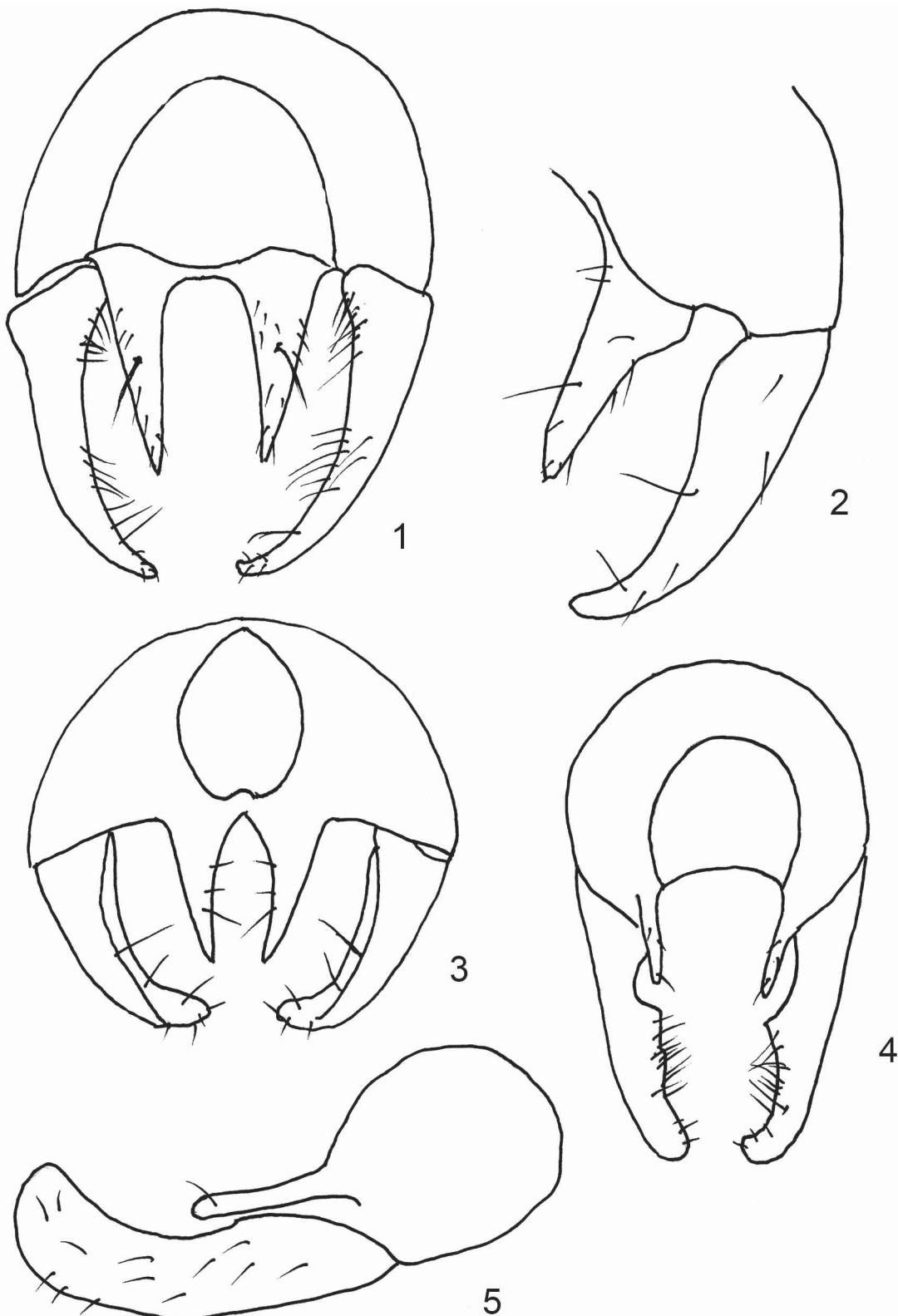
**Type material.** Holotype ♂: Italia, Sardegna (Ogliastra), Seui, dint. [= environs] M. Tonneri, Saliccaiei su de, UTM 32 S 531228 4413496, 912 m, 5.IX.2006, D. Avesani, M. Bardiani, D. Birtele & G. Nardi leg. (CNBFVR).

Paratypes: 5 ♂♂, 2 ♀♀: same data as holotype (3 ♂♂, 1 ♀ – CNBFVR; 2 ♂♂, 1 ♀ – ZIN); 1 ♂: Italia, Sardegna (Carbonia-Iglesias), Domusnovas, Lago Siuru, UTM 32 S 467069 4357916, 322 m, 12–17.VII.2006, Malaise trap, D. Avesani, M. Bardiani, D. Birtele, P. Cerretti, M. Mei & D. Whitmore leg. (CNBFVR).

**Diagnosis.** Species similar to *Aphanotrigonum hastatum* Dely-Draskovits, 1981 (Fig. 3), described from Afghanistan. The new species differs from the latter by possessing two hind notopleural setae, instead of one as in *Aphanotrigonum hastatum*, and longer apical scutellar setae, which are inserted closer to each other. There is also a difference in the structure of the male genitalia: cerci wider apart and surstyli narrower.

**Description.** Male, female. Frons, gena and face yellow. Ocellar triangle black, grey dusted, extending along half the length of frons. Occiput black, grey dusted. Gena as wide as first flagellomere. Antenna yellow; arista black, short pubescent. Setae and setulae of head white. Thorax black, densely grey dusted. Scutum with

two depressions along dorsocentral line, which is widened posteriorly before scutellum. Pleura with pruinosity. Notopleural setae 1+2. Scutellum trapeziform, as long as width at base. Apical setae nearly as long as scutellum, subapical setae nearly 1/3 the length of apical setae. Distances between apical setae and between



**FIGURES 1–5.** Male terminalia. **1–2.** *Aphanotrigonum lanceolatum* sp. nov. (paratype, Salicca ie su de). **1.** Epandrial complex in dorsal view. **2.** Epandrial complex in lateral view. **3.** Epandrial complex of *Aphanotrigonum hastatum* Dely-Draskovits (after Dely-Draskovits 1981) in dorsal view. **4–5.** *Dicraeus sardous* sp. nov. (paratype). **4.** Epandrial complex in dorsal view. **5.** Epandrial complex in lateral view.

apical seta and subapical one are slightly shorter than the length of subapical seta. All setae and setulae of thorax white. Wing transparent with brown veins. Correlation of length of costal sections 2:3:4 equals 27:14:9. First basal cell not widened. Veins  $R_{4+5}$  and M parallel. Section of M between r-m and dm-cu about twice as long as dm-cu. Haltere white. Legs: femora black, tibiae black with yellow ends, tarsi yellow. Abdomen brown. Male terminalia (Figs 1–2): epandrium brown; cerci long and lancet-shaped, widely separated from one another. Surstyli rather narrow.

Body length: 2 mm.

**Etymology.** The species epithet refers to the shape of the male cercus.

***Dicraeus (Oedesiella) sardous* sp. nov.**

(Figs 4–5)

**Type material.** Holotype ♂: Italia, Sardegna (Carbonia-Iglesias), Domusnovas, Valle Oridda, UTM 32 S 466973 4362228, 592 m, 2–16.V.2006, Malaise trap, G. Chessa leg. (CNBFVR).

Paratype: 1 ♂: same data as holotype (ZIN).

**Diagnosis.** The species is included in subgenus *Oedesiella* Becker on the basis of the structure of the male genitalia: cerci long, narrow and wide apart, surstyli longer than epandrium. The new species looks in appearance like *Dicraeus (Dicraeus) tibialis* (Macquart, 1835) in having only one hind notopleural seta and the pleura dusted on most of their surface, but differs by the darker body colour—especially the abdomen—wider genae and the structure of the male genitalia. The new species differs from other species of the subgenus *Oedesiella* by the dusted pleura and the structure of the male genitalia.

**Description.** Male. Frons, face and gena yellow; frons darkened. Ocellar triangle black, extending along  $\frac{1}{2}$  of length of frons. Gena wider than first flagellomere. Antenna yellow with first flagellomere darkened above; arista black, short pubescent. Occiput black. Setae and setulae of head black. Thorax black, scutum and pleura dusted. Notopleural setae 1+1. Scutellum semicircular. Apical setae longer than scutellum. Subapical setae inserted halfway between apical setae and base of scutellum. Wings transparent with brown veins. Correlation of costal sections 2:3:4 equals 34:11:8. Costal vein well visible up to the end of vein M. Veins  $R_{4+5}$  and M parallel. Section of M between r-m and dm-cu slightly longer than dm-cu. Haltere white. Legs: middle and hind leg entirely black, fore femur black, fore tibia yellow, fore tarsi blackish. Abdomen brown. Male genitalia (Figs 4–5): epandrium brown; cerci long and narrow, wide apart; surstyli longer than epandrium, with long setae on inner side.

Body length: 2 mm.

Female: unknown.

**Etymology.** The specific name is a Latin adjective referring to the type locality.

***Elachiptera sarda* sp. nov.**

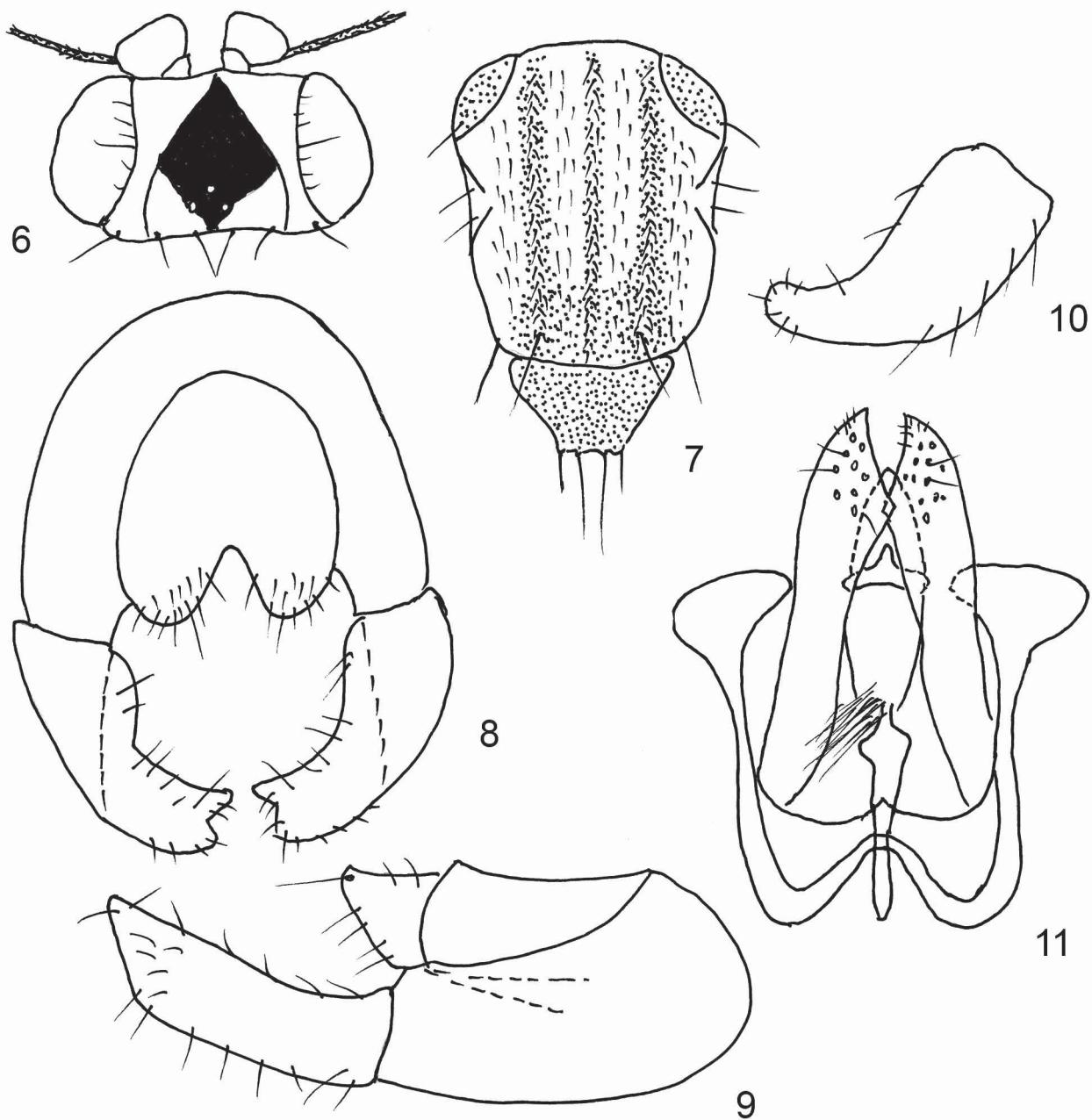
(Figs 6–11)

**Type material.** Holotype ♂: Italia, Sardegna (Carbonia-Iglesias), Domusnovas, Lago Siuru, UTM 32 S 467069 4357916, 20–23.V.2006, Malaise trap, M. Bardiani, D. Birtele, P. Cornacchia & D. Whitmore leg. (CNBFVR).

Paratypes. 1 ♂, 6 ♀♀: same data as holotype (4 ♀♀—CNBFVR; 1 ♂, 2 ♀♀—ZIN).

**Diagnosis.** Species similar to *Elachiptera cornuta* (Fallén, 1820) and *E. rufifrons* Duda, 1932. It can be distinguished from the former by the dusted line in the middle of the scutum, along the acrostichal setulae, the dusted prescutellar part of the scutum and the yellow hind corners of the ocellar triangle. Contrary to *E. rufifrons*, the ocellar triangle of the new species is mostly black except for its hind corners, and the dusted

stripe on the scutum is divided into 3 longitudinal lines: two wider ones along the dorsocentral setulae and a narrow one along the acrostichal setulae. Like *E. austriaca* Duda, 1932 the new species has only one long orbital seta, but differs from this species by its black thorax.



**FIGURES 6–11.** *Elachiptera sarda* sp. nov. (paratype). **6.** Head. **7.** Scutum. **8.** Epandrial complex in dorsal view. **9.** Epandrial complex in lateral view. **10.** Surstyli in ventro-lateral view. **11.** Hypandrium.

**Description.** Head (Fig. 6) yellow with black lower parts of occiput, postgena and central part of ocellar triangle. Ocellar triangle black with large, yellow hind corners. Occiput and hind corners of ocellar triangle dusted. Frons covered with yellow setulae. Setae of head yellow; only one long orbital seta. Gena a little narrower than first flagellomere, with well developed vibrissa. Antenna yellow, first flagellomere shorter than high, with a black mark at base of arista. Arista black, flattened, broad and parallel-sided, covered with black hairs. Palpus yellow. Thorax shiny black, with narrow reddish marks on hind corners of thorax at the sides of

scutellum. Scutum (Fig. 7) shiny with 3 dusted stripes: two broader ones along dorsocentral setulae and a narrower one along acrostichal setulae. Hind part of scutum, before scutellum, also with pubescence. Scutellum trapeziform with 3 pairs of small scutellar tubercles, the basal pair very small. Apical scutellar setae longer than scutellum. Distances between tubercles equal to one another. Seta on postpronotum short. Postalar seta long. Notopleural setae 1+1. Wing slightly brownish, longer than abdomen, veins brown. Correlation of length of costal sections 2:3:4 equals 33:30:15. Haltere yellow. Legs yellow with blackish fore tibia and tarsus in most specimens. Hind tibia sometimes with blackish stripe on anterior surface. Abdomen dorsally brown with pale parts on tergites I-II, ventrally pale. Male genitalia as in Figs 8-11.

Body length: 2.5 mm.

Female: differs from male in the external morphology by having 2 long orbital setae.

**Etymology.** The specific name is a Latin adjective referring to the type locality.

**Remarks.** Some variability can be observed in the size of the black spot on the ocellar triangle, the presence of reddish spots on the sides of scutellum and the amount of black on fore tibia and tarsus. Probably, three females from the Balearic Islands (Spain), which Ebejer (2006) listed as "*Elachiptera* sp.", belong to the same species. The Balearic specimens were reared from larval frass in an old Lepidoptera tunnel in stems of *Phragmites* sp. on 21-27.V.2006.

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